RECORD OF COMMUNICATION

August 8, 2017

Call with Powertech to discuss next steps with the draft permits.

John Mays, Powertech COO

Lisa Scheinost, Powertech

Darcy O'Connor, EPA

Douglas Minter, EPA

Valois Shea, EPA

Summary of Call:

The EPA is currently working with Cadmus, an EPA contractor, to compile all the public comments into two documents so the EPA can post them on the Region 8 UIC Program website and have them available to the public for review. One document will contain comments from public entities; the second will be comments from private individuals. The comments will also include testimony provided during the public hearings.

Cadmus will organize the comments into different topics to make it more efficient for the EPA to address the comments. Cadmus is also reviewing the 7,000+ emails sent to the EPA to identify where the sender added additional comments to the template email text to make sure we do not miss any comments.

The EPA is focusing review on comments received from Tribes in preparation of consultation meetings that we hope to schedule soon.

There are over 1,000 pages of public comments, plus additional documents the public submitted for review, so it is taking a while to review them. We don't have a date for when we expect the review to be completed.

We will let Powertech know when the comments are posted on the EPA website. We plan to send an email out to everyone who signed up on the contact list at the public hearings and everyone who emailed comments announcing that the comments are available for public review.

RECORD OF COMMUNICATION

January 30, 2018

Summary of Meeting (conference call) focused on Powertech's Comments on the draft UIC Class III Permit (see EPA's attached outline of questions sent to Powertech prior to the meeting).

John Mays, Powertech

Blake Steele, Powertech

Valois Shea, EPA

Douglas Minter, EPA

Starting at 9 am, EPA and Powertech were able to discuss the following topics to provide EPA clarification on Powertech's comments:

1) Differences between Preliminary Economic Assessment and Class III UIC permit application (e.g., production flow rates of 8,000 gpm in the PEA vs. 4,000 gpm in the permit application).
2) Powertech's plans for Well 16 located within one of the proposed AE area delineation options which were expressed in their comments.
3) Class III permit requirements for step rate tests (to determine MAIP) and where these tests can be run without compromising the integrity of the injection zone (i.e., avoid fracturing).
4) Bounding analysis process describing the pressure dynamics between the manifold/header house monitoring and the wellhead monitoring to ensure that injection formation fracture pressure is never exceeded.
5) Injection well construction options including screened injection tubing designs to release gas without letting water into injection zone at relatively low pressures. This is similar to how a private water well operates.
6) Purpose of "trend" wells which is a "control" well that allows earlier detection of "flares" within the injection zone (prior to hitting a monitoring well) where flow rates through thinner sands (via aquitards) may be higher).
7) Distinguishing between actual draw down of the aquifer's potentiometric surface from changes in barometric pressures during a pump test.

John and Blake met with Darcy and RA in early December and asked for a timetable informing how long it would take EPA to make final permit decisions. Blake committed to emailing Darcy and Doug about this since neither Douglas or Valois were at this meeting.

We also discussed the process we must follow for compliance with the Endangered Species Act in more detail than was provided in the draft permits.

We agreed to meet next on Friday, February 23 at 9 am and to convey a list of topics to discuss to Powertech the Friday before (2/16/18).

Conference call concluded at 10:30 am.

RECORD OF COMMUNICATION

February 23, 2018

Summary of Meeting (conference call) focused on Powertech's (PT) Comments on EPA's proposed aquifer exemption.

Lisa Scheinost, Powertech Licensing and Compliance Engineer

John Mays, Powertech COO

Blake Steele, Powertech

Valois Shea, EPA

Douglas Minter, EPA

Starting at 9 am, EPA and Powertech discussed the following topics to provide EPA clarification on Powertech's comments:

1. **Pressure step rate test (SRT) procedures and location for determining the fracture gradient of the Inyan Kara**. Powertech described different approaches and locations for conducting SRTs. Options include one running one SRT in Section 33 or SRTs at different depths.
2. **Options for drilling into the Deadwood formation under the Class V permit**. We discussed if there are any benefits from drilling this deep and if there are other ways to characterize the base of the Minnelusa to ensure hydraulic confinement to protect the underlying Madison as a USDW.
3. **Reconsidering the current AE delineation boundaries**: If Powertech wishes to propose changes, EPA would consider any changes and then public notice by specifically requesting comment on these changes. This could be done after wellfield operations/injection commence as long as ISR can safely occur within the current delineated areas. Powertech will respond on how they wish to proceed.
4. **December 15, 2015, USFWS Letter to Powertech regarding need for an eagle "take" permit:** We discussed Powertech's baseline wildlife report and how Powertech would commence operations without the take permit in place (e.g., starting in the Burdock area further away from eagle habitat).
5. **Avian Management Plan:** This is a SD Game and Fish and DENR requirement and Powertech will submit this after it has obtained all federal permits and a State large scale mine permit. It will have to update its wildlife report before its submits this Plan to the State. A number of mitigation measures for protecting endangered species are already approved in the approved NRC license.
6. **Well 16:** Lisa spoke with DENR who confirmed that the classified use of the well could be changed by letter of request by Powertech (e.g., to a "monitoring/observation" well). However, PT would have to figure out if it would need to provide another source of stock water to the land owner under this new classification. EPA committed to provide feedback on this proposed approach.

We agreed to let PT know later when we would be ready to schedule our next call. Conference call concluded at 10:15 am.

RECORD OF COMMUNCATION

May 3, 2018

Summary of Meeting (conference call) to discuss questions and answers related to the Class V wells area permit.

Lisa Scheinost, Powertech Licensing and Compliance Engineer

John Mays, Powertech COO

Valois Shea, EPA

Douglas Minter, EPA

Starting at 9 am, EPA and Powertech discussed the following topics to provide EPA clarification on Powertech's comments:

Questions for Powertech Related to the Class V permit:

1. What is your timeframe for construction of the Class V wells and for construction of the Madison drinking water wells? Class V disposal wells must be completed and operational before Class III sub/surface operations commence. The cost for a Madison well would be high (at least a million or more dollars per well). PT is planning to budget for at least one Madison well as a contingency knowing that it may be needed some time later before ISR operations are finished. In its comments, PT objected to this being requirement (i.e., the draft permit requires that two Madison wells be drilled). EPA will need to think about and talk further with PT about how confinement of the Lower Minnelusa can be determined to be adequate absent any data from drilling a Madison water well.

2. If you get the water rights permits from the DENR, why would you not construct the Madison water supply wells? The demand for Madison water is not significant until later in the project timeframe for groundwater restoration, etc. There are other sources of water including the Inyan Kara and other shallower aquifers where the chemistry may be more similar to the ISR mining zone than the Madison. PT can use RO if needed to facilitate restoration and the need for Madison may be a last option due to expense, etc.

3. What is your backup water supply if you don't get the water rights permits from DENR?

See above.

4. We understand the challenges related to using the ammonium nitrate as the tracer in the drilling mud. Is there another tracer you could use in the drilling mud? PT does believe that there are alternative tracers (e.g., fluorescent dye) available but would need to research this further to confirm what would work best.

5. Is there a reason you would not do a drill stem test on the Minnelusa while drilling the well to confirm that it is not a USDW as early as possible? PT would be willing to do this when drilling the Madison well but noted that this is not a requirement in the draft permit. PT would also expect to sample the Minnelusa injection well and could include a DST even though other local data shows that the aquifer should be above 10,000 mg/l TDS. PT was also planning to take a sample after the casing, tubing, and packer were installed for the Minnelusa injection well. PT stated that TDS samples of the Minnelusa surrounding the project area show concentrations above 10,000 mg/l.

6. Related to the requirement for collecting core in the confining zones: How would you decide where to collect core? Are you asking to remove the 50 ft minimum?

In proposing their alternative, PT would take core samples during drilling of the Minnelusa injection well based on the log of a nearby well and then check for whether comparable confinement is found by comparing these samples against the results of subsequent logging of the injection well after it is drilled.

7. We want to explain the thinking behind the Limited Authorization to Inject process. Region 8 explained how this has been done for Class II wells. We explained that EPA will always need time to review testing/logging results after initial injection before it determines if longer-term injection can proceed. PT acknowledged this. We committed to coordinating closely on this with PT when the time comes. PT let us know that a DENR Mining Division inspector will maintain a field presence for monitoring ISR operations.

8. Discuss the flexibility you are looking for under comment 24 for permitted well construction requirements. EPA has the flexibility to adjust the well construction requirements during its initial drilling and construction by minor modification. Once the well is built and operational, subsequent changes to well construction are considered a major modification. PT would like to see more flexibility in the final permit conditions to accommodate a change in casing size, casing perforations within an interval that is already perforated, etc. PT stated the existing draft permit requires a major modification and would not allow them the flexibility they need.

9. Discuss "appropriate methods" for obtaining uncontaminated DST samples as stated in comment 9 which proposes groundwater "sampling be conducted 'as appropriate given the tools available' ". PT requests more flexibility with this requirement including since it may not be possible to use a submersible pump during a DST.

10. Comment 33 refers to the stability criteria for field-measured pH, specific conductance and temperature described in the June 2011 TR RAI 5.7.8-19 Response which states "The criterion used to assess stability will be three consecutive measurements of each of the field parameters with values for each parameter within 10%." In the Environmental Report, Table 6.1-17: *Stability Criteria for Collecting Groundwater Samples at Pumped Wells* lists the criteria for these three parameters as shown below for collecting the groundwater samples used for the permit and license application water quality data.

Field Measurement	Stability Criteria[1]
pH	+/- 0.1 standard units
Temperature	+/- 0.2 C
Specific conductivity	+/- 5% (SC <= 100 µS/cm): otherwise +/- 3%

Why can't these stability criteria be used for the Class V well samples or at least for the Minnelusa samples? We are concerned that the Minnelusa will have elevated temperature and specific conductance and 10% difference will be elevated accordingly.
Note: I was out of the room during this conversation with PT.

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For ESA, the eagle nest tree has fallen down in the Dewey unit and no eagles are residing in the project area this year. Couldn't they return? Yes, PT would take steps accordingly as species has coexisted in other ISR sites in Wyoming. We let PT know that Lynne Newton would be working on our ESA findings related to the DB project along with our attorneys.

RECORD OF COMMUNICATION

September 13, 2018

Call with Powertech to discuss next steps with the draft permits.

John Mays, Powertech COO

Lisa Scheinost, Powertech

Douglas Minter, EPA

Chuck Tinsley, EPA

Rick Arnold, EPA

Valois Shea, EPA

Summary of Call: Call with Powertech to talk about next steps for the draft permits

The EPA let Powertech know we have decided to issue updated draft permits.

The Class III draft permit will no longer contain requirements for post-restoration modelling. The updated draft permit will require Powertech to develop a Conceptual Site Model that will involve collecting targeted, site-specific data in order to calibrate a geochemical model that will be required to evaluate the potential for ISR contaminants to cross the downgradient aquifer exemption boundary. Powertech will need to do a model for each wellfield demonstrating that the restored concentrations of ISR contaminants will be geochemically stable in the long term and evaluate the potential for ISR contaminants to cross the downgradient aquifer exemption boundary.

The Region 8 UIC Program has set up a work order on the EPA's contract with Cadmus to provide a criteria document listing important information to include in the Conceptual Site Model and the geochemical model that will assist the EPA in developing the Class III permit requirements for each type of model. Cadmus will also generate a technical support document for each type of model to assist the EPA in developing the explanation of the permit requirements to include in the Class III Fact Sheet. Cadmus will also develop a document listing acceptance criteria for the geochemical model, which will be included as an appendix to the Class III permit. This will assist the EPA staff person who reviews each wellfield model to be sure the model complies with permit requirements and is adequate for the intended purposes.

The geochemical model will be due to the EPA at the time of wellfield closure, except for Burdock wellfields 6, 7 and 8. The Class III draft permit will require Powertech to complete a geochemical model to include in the Injection Authorization Data Package Report. The EPA wants to understand the potential for ISR contaminants to cross the aquifer exemption boundary for these wellfields before issuing the authorization to inject in these wellfields.

Another occasion when the geochemical model would need to be done before well closure is when there is an expanding excursion plume. The geochemical model would be used to evaluate the potential extend of the excursion plume and the potential for ISR contaminants to cross the downgradient aquifer exemption boundary.

The Class V permit will be updated to address comments received from Powertech. The EPA has identified a number of changes that need to be made based on public comment and review of the permit by a new EPA permit writer.

RECORD OF COMMUNICATION

Chuck Tinsley and Rick Arnold were introduced to Powertech during this meeting. Chuck will be working on changes to the updated Class V draft permit and Rick will be working on the modeling requirements in the updated Class III permit.

RECORD OF COMMUNICATION

November 13, 2018

Summary of Call with Powertech to discuss options for the aquifer exemption boundary and how the EPA public review process differs from the NRC public review process

John Mays, Powertech COO

Douglas Minter, EPA

Valois Shea, EPA

Summary of Call:

Powertech requested a call to discuss the steps to change the aquifer exemption boundary from the location originally requested.

The EPA's answer: Submit a new AE request with maps showing where the new AE boundary would be located. Powertech would need to do updated capture zone analysis for all the private wells located downgradient or cross-gradient near any wellfields, basically redo the EPA's capture zone analysis with a flow model that can simulate well pumping and well resting stages more realistically than the EPA's status pumping equation.

The first draft Aquifer Exemption Record of Decision set the AE boundary 120 feet from the perimeter monitoring well rings. The EPA realized that the perimeter monitoring well ring could shift slightly after wellfield delineation drilling identified more precisely the edges of the uranium ore deposits. We will issue an updated AE Record of Decision that makes clear to the public the fact that the AE boundary could shift after wellfield delineation. The Region 8 Office of Regional Council advised the UIC Program that the AE ROD would need to show the public just how far out the AE boundary could potentially move before the EPA would need to receive a new AE application.

EPA questions to Powertech: What is the maximum extent Powertech expects the AE boundary to move?

Powertech response: no more than ¼ mile from the present boundaries of the uranium ore deposits (what Powertech considers to be the wellfield boundaries), and most likely not nearly that far in most cases.

EPA reply: the new AE ROD will include a map that shows a boundary ¼ from the edge of the ore deposits with the aquifer exemption boundary map overlain to show the public the maximum extent the AE boundary could move before the EPA would require a new aquifer exemption application and new capture zone analysis for private wells.

Powertech had also asked the EPA if the agency could simulate the NRC public review process where information is released to the public as it is handled by the agency, rather than go through the 30-day public comment period.

The EPA's answer: The EPA public review process is regulated under 40 CFR part 124. We have to have issue draft permit decisions, schedule a 30 days comment period, provide a public hearing if the public requests one. With the level of public interest we will schedule the public hearing without waiting for a request from the public. There is no process for release documents for public review before the draft permit issuance.

RECORD OF COMMUNICATION

February 7, 2019

Summary of Call with Powertech to discuss new time line for issuing the updated draft permits after the furlough added delay to our timeline.

John Mays, Powertech COO

Lisa Scheinost, Powertech

Darcy O'Connor

Sarah Bahrman, EPA

Douglas Minter, EPA

Valois Shea, EPA

Summary of Call:

Powertech requested a call with the EPA in order to receive an update on the EPA's timeline for issuing the updated draft permits after the delay caused by the government furlough. The original time frame the EPA had proposed was to issue draft permits the end of May 2019. Now the EPA anticipates issuing draft permits in late August 2019.

Powertech asked why a furlough lasting 6 weeks resulted in a delay of 3 months. EPA staff explained that when they anticipated issuing updated draft permits in May, it was two permit documents and two fact sheets the EPA expected to issue for public review. Since that time, the Office of Region Council informed the UIC Program that there is regulatory authority to include mitigation measures in UIC permits to comply with the Endangered Species Act and a National Historic Preservation Act. In order to include mitigation measures to comply with the ESA, EPA staff would need to complete a Biological Assessment and consultation with the US Fish & Wildlife Service. Although development of the Biological Assessment is underway, there is still more work to do. Another document that will be issued for public review is an updated Environmental Justice (EJ) Analysis. The EPA decided, based on comments received during the public comment periods, that the EJ document should be updated to:

1) Include historic information on Treaties affecting the Black Hills in order to support additional Tribal Consultation on Treaty Rights,
2) Include analysis of the Black Hills as a sacred site and how historic environmental impacts has affected the spiritual integrity of the Black Hills and the resulting impacts on the wellbeing of Tribes with historic interest in the Black Hills.

RECORD OF COMMUNICATION

May 2, 2019

Summary of Call with Powertech to discuss Class III and Class V well construction diagrams

John Mays, Powertech COO

Chuck Tinsley, EPA

Douglas Minter, EPA

Valois Shea, EPA

Summary of Call:

Class III well diagram discussion:

1. What would the open hole completion diagram look like for a Class III well compared to the existing well diagram with the well screen?

Answer: Besides no well screen, no gravel pack, K packers or J collar.

2. When would you use the open hole completion on a Class III well?

Answer: When the injection interval sandstone is competent enough to stand open unsupported and the injectate flows the injection interval efficiently with a well screen.

We talked through the changes in the Class V well diagrams and the Well Casing and Cement Summary table. Chuck will do new well construction diagrams to show what the permit requirements will be.

RECORD OF COMMUNICATION

August 5, 2019

Summary of Call with Powertech to discuss permit requirements for demonstration of financial responsibility and proposed mitigation measures for the Triangle Mine vertical shaft as a potential roost or hibernaculum for the Northern Long Eared Bat

John Mays, Powertech COO

Douglas Minter, EPA

Valois Shea, EPA

Summary of Call:

The UIC permits need to include requirements to demonstrate financial responsibility for the two proposed Class V wells and the first Class III wellfield to be constructed. Powertech needs to have demonstration of FR in place before issuance of final permits.

We need to include a mitigation measure for the vertical ventilation shaft at the Triangle Mine in NWNW Section 31. The proposed mitigation measures states:

Establish a ¼ mile buffer zone around the Triangle Mine vertical ventilation shaft located at NWNW Section 35, T6S, R1E as a potential hibernaculum for the Northern Long-Eared Bat, where no tree removal or construction activity takes place all year round.

RECORD OF COMMUNICATION

August 6, 2019

Summary of Call to discuss Powertech's (PT) alternative approach to the mitigation measures for the Triangle Mine vertical shaft

John Mays, Powertech COO

Valois Shea, EPA

Summary of Call:

Powertech proposed a different approach for mitigation measure for the Triangle vertical mine shaft:

Powertech would set up a motion-activated camera to see if there are bats coming in and out of the mine shaft. If there are no bats, they will investigate the mine shaft to confirm no bats are present, then put a finer mesh over the opening to prevent bats from entering the mine shaft.

If there are bats, they will set up the ¼ mile buffer zone around the mine shaft. However, there is a road near the shaft that residents use, so there will still be traffic along the road. The road will probably be improved to use for ISR operations, so road construction will occur at some point. That will have to be scheduled around the optimum season for bats, if there are bats present.